Title

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Background

The Institute of Medicine's 2002 comprehensive report, *Unequal Treatment*,[1] clearly documents racial and ethnic disparities in health care. It identifies aspects of the clinical encounter that contribute to these disparities, and the study committee calls for a multi-level strategy to address them. Among its recommendations, the committee suggests integrating "cross-cultural curricula … early into the training of future healthcare providers." This recommendation has been embraced at the policy level and currently is one of the medical school accreditation standards.[2]

Two-thirds of graduating seniors responding to the AAMC Graduation Questionnaire in 2002 reported appropriate or excessive amounts of instruction in culturally appropriate care. How this is taught, the content addressed, as well as the methods of instruction used, vary considerably.[3] As a recent issue of *Academic Medicine* (June, 2003) attests, efforts to develop and evaluate cultural competency initiatives in undergraduate medical education are relatively new. Not surprisingly, there is a need for methods of assessing the effectiveness of these efforts.[4]

One method of performance assessment, commonly used to ensure minimal competency in knowledge application and diagnostic and therapeutic skills use, is the objective structured clinical examination (OSCE).[5] In these clinical examinations, medical students, acting as physicians conduct a series of clinical encounters with standardized patients (SPs) who present specific complaints and simulate physical findings. SPs rate student performance on a checklist designed to assess behaviors specific to the case presented. The fidelity of the exams to clinical encounters and numerous studies supporting the reliability of ratings and the predictability of future performance have supported their wide-scale use in medical education.[6]

OSCE cases have been successfully designed to elicit interpersonal and communication skills[7] and even empathy.[8] As educators turn their attention to medical students' development of clinical skills related to cultural competence, they look to OSCE cases as one method to evaluate students' skills in providing care in situations posing a cross-cultural challenge.[9] Such cases can elicit students' attitudes toward cross-cultural situations and their skill in recognizing cross-cultural issues, in interviewing, in communicating medical information, and in negotiating treatment with patients of different backgrounds.

Despite the growing interest in assessing medical students' cultural competencies using clinical practice exams, few efforts have been reported in the literature. Since studies of actual physician-patient interactions suggest that patients seeing physicians of their own race rate the

encounters as more participatory and therefore, more satisfactory several investigators have examined the influence of the examinee's and/or SP's race on performance ratings. Colliver, Swarz and Robbs (2001) examined interactions between the student's and SP's ethnicity as a validity concern. In a sample of more than 1000 students from two classes, they found 3 of 24 interactions to be significant with mixed results and weak effects. Consequently they concluded that ethnicity of the SP and student did not pose a threat to validity. Wass, et al. (2003) examined the relationship between ethnic background and performance of UK medical students in OSCE stations assessing communication skills. They found that the ethnic minority students performed significantly more poorly, on average, than white students. A discourse analysis of 309 videos uncovered no overt discrimination, but transcriptions revealed subtle differences in communication styles that may have resulted in biased scores by the SP.

One study directly assessed the relationship between students' ethnic background and their cultural competence. Robins et al. (2001) examined the clinical performance of 71 students on a single OSCE station on cross-cultural communication involving an African American woman presenting with diabetes. The 10-item checklist was composed of three subscales: disease beliefs and management, cultural concerns, and rapport-building. Underrepresented minority students (n=8) performed significantly better than all others (n=58) in addressing cultural concerns related to dietary habits, whereas white students (n=37) performed significantly better than all others (n=30) in addressing disease beliefs and management. No gender differences were found. These findings suggest that cultural competency skills can be assessed in the context of an OSCE, but the small sample size and the use of a single site limit generalizability of the findings. Moreover, the relationship between cultural competency skills and other aspects of the clinical encounter have not been investigated.

Purpose and Significance of the Study

The current study extends existing work to investigate the feasibility of assessing medical students' use of patient-centered strategies[10] in an objective structured clinical examination using standardized patients as one approach to ensuring culturally competent care. The use of patient-centered strategies was evaluated in the context of a single station designed to elicit cross-cultural issues and embedded in the history taking and information sharing portions of non-targeted stations. The IOM report, Crossing the Quality Chasm, defines patient-centered strategies as those of "*providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions*" (p. 6).[11] The current study investigates the reliability and validity of the cultural competency scores

produced in these two contexts and the relationship between these scores and other components routinely measured (i.e., history taking, physical exam, information sharing and physician-patient interaction) in an OSCE. In addition, the validity of the OSCE scores is investigated by examining their association to students' self-reported learning experiences and beliefs about diversity in medicine.

Methods

A multi-station clinical performance examination was administered to 441 final-year medical students at three medical schools in California. The multi-station examination consisted of seven standardized patient (SP) encounters of 15 minutes each in which students were instructed to perform focused patient workups with attention to skills in physician-patient communication and information sharing (e.g., treatment plan).[12] The cases, described in Table 1 below, represented a mix of acute, chronic, well-care, behavioral, and ill-defined problems. The cultural competency case presented a middle-aged African American male with uncontrolled hypertension. Student classes at each campus completed the half-day exam over a two- to three-week period with students randomly assigned to day.

Table 1: Patient Characteristics in OSCE

Presenting Complaint	Problem	Age	Sex	Ethnicity	Exam Components (# Cultural Items)
Abdominal pain	acute	31	M	white	History (1), physical exam, information sharing (1), communication
Hypertension	chronic	35	M	African-American	History (6), physical exam, information sharing (4), communication
Chest pain	acute	39	M	white	History, physical exam, information sharing, communication
Follow up visit for diabetes	chronic	50	M	white	History, physical exam, information sharing (1), communication
Cough and fatigue	chronic	64	M	white	History (1), physical exam, information sharing (1), communication
Back pain	ill-defined	35	M	white	History, physical exam, information sharing (1), communication
High risk behavior	well care	16	F	Hispanic	History, information sharing (1), communication
Confusion	ill-defined	70	F	W	History (1), physical exam, information sharing (1), communication

Standardized patients received 16 hours of training in presentation of the case and use of the checklist for scoring. SPs entered their ratings immediately following the clinical encounter using the WebSP software. Usually two SPs were trained to play the role of

the patient in each case. No SP was involved in more than a single case or school, so that rater effects are confounded with student, case, and school. Students were assigned to SPs based on the day and time selected for administration, which occurred non-systematically.

SPs completed specific case-related items assessing history taking, physical examination, information sharing, and clinical courtesy. Items were dichotomous with SPs rating whether the behavior was "*done*" or "*not done*" (and in the physical exam "*done incorrectly*"). For all cases, SPs rated students on the same seven physician-patient communication items using a 6-point Likert-type rating scale ranging from "outstanding" to "unacceptable". SPs provided a rating of their "overall satisfaction with this student encounter" and provided narrative comments at the end of the checklist in response to an open-ended request to write "*positive comments for this student*" and "*constructive comments for this student*".

Cultural competency items were developed following the patient-centered care model[13] and integrated into the history taking and information sharing components of the checklist. In six cases, SPs rated whether students took the patient's perspective into account when negotiating treatment ("*framed the action plan in such a way as to incorporate my beliefs or preferences*"). In three cases, SPs rated whether students elicited the patient's explanatory model for the illness ("*found out what the patient thought was causing his/her problem or the name she/he gave it*"). In addition to these items embedded throughout the exam, the hypertension case included six cultural items in the history-taking section about the patient's beliefs about his illness and the medications prescribed and four items in information sharing addressing the prevalence of high blood pressure among the African American population and involving the patient in treatment planning. All cultural competency items were scored dichotomously.

Prior work on the underlying structure of a comprehensive OSCE as well as work on the item structure of communication skills led us to hypothesize that cultural items would share variance both with the component measured (e.g., history taking) and the case where it was embedded (e.g., teen with at risk behaviors). Consequently, internal consistency reliabilities of the embedded and case-specific cultural competency items

were estimated separately for the history taking and information sharing questions and combined across sections. Scales based on the sum of these items were created. An exploratory factor analysis using principal axis factoring was conducted using the embedded and case-specific cultural competency scores and the history, physical exam, information sharing, and physician-patient interaction scores for each of the eight cases. Analyses involved 441 rising fourth year students at three California medical schools. At two schools the IRB approval gave the study exempt status, so all student data were analyzed. The IRB at the third school required student consent for data use. Twelve of the students denied consent and 50 students did not respond to the request resulting in a 60.7% sample of 104 students.

During the OSCE, students complete a series of surveys and exercises between stations. Following the hypertension station, students completed a 55-item questionnaire designed to investigate their experiences with diversity prior to attending medical school, their structurally supported formal and informal experiences while in medical school, and their beliefs about the role of diversity in the medical school environment.[14] To investigate the validity of the cultural items, students' experience with diverse groups prior to medical school, the extent of formal educational experiences and informal discussions about health and diversity, and their beliefs about the benefits of diversity education for physicians in training were entered into two regression analyses to predict students' cross-case patient-centered performance and to predict their performance on the patient-centered items in the hypertension case.

Results

We computed the item mean and Cronbach's alpha for the cultural competency items embedded across cases and within the single cultural competency case. As shown in Table 2 below, item means generally were low, indicating that, on average, only 50% of the students executed the patient-centered behavior indicated. Students performed slightly better on the embedded items (M = .53) than on those in the cultural competency case (M = .47), and considerably better on the information sharing items than the history taking items regardless of context. Reliabilities were higher in the single case, based on 10 items (alpha = .70) than across cases (alpha =.19, items = 9).

Reliabilities on history items were higher than information sharing items, and reliabilities on combined item sets were generally comparable to those obtained on the history items alone.

Table 2: Patient-Centered Care Item Means and Internal Consistency Reliabilities

Item Set	Number of items	Item Mean	Reliability
Embedded items	9	.534	.193
Embedded history items	3	.304	.168
Embedded info sharing items	6	.649	.071
Cultural case items	10	.468	.697
Cultural case history items	6	.344	.705
Cultural case info sharing items	4	.653	.537

Exploratory factor analysis demonstrated a complex structure underlying the exam. A principal axis extraction generated 9 eigenvalues greater than 1, accounting for 39.3% of the variance. The scree plot indicated a two-factor solution was appropriate, but examination of the residual correlation matrix suggested that a third factor was needed as a few correlations of .1 remained. The three-factor solution accounts for 20.6 % of the variance. Modeling the three-factor solution with promax rotation led to the structure shown in Table 3 below. The factor correlation matrix (r_{12}= .36, r_{13}= .38, and r_{23}= .22) contains two values greater than .32 suggesting that an orthogonal rotation is inappropriate. The three-factor solution is generally interpretable. The first factor represents general communication skills with the embedded cultural items and the physician-patient interaction scores from most cases loading on it. Factor 2 represents performance on the cultural case and includes a moderate loading from the communication item set for the uncontrolled diabetes case and a lower loading from the case involving chronic cough. In addition, two item sets (history and information sharing) from the ill-defined back pain case have low inverse loadings on this factor. Factor 3 is defined by the item sets for the diabetes case.

Table 3: Factor Structure of Cultural Items

Case	Item set	Factor 1	Factor 2	Factor 3
Cross cases	Embedded Culture	**.647**		
Hypertension	Culture w/n History		.251	
	Culture w/n Information Sharing		**.557**	
	History		.295	
	Information Sharing		**.418**	
	Patient-Physician Interaction		**.744**	
Confusion	History			
	Information Sharing			
	Patient-Physician Interaction	**.348**		
Abdominal pain	History			
	Information Sharing	.284		
	Patient-Physician Interaction	**.463**		
Diabetes follow-up	History			**.761**
	Information Sharing			**.810**
	Patient-Physician Interaction		**.325**	**.444**
Teen w/ high risk behaviors	History	**.314**		
	Information Sharing	**.327**		
	Patient-Physician Interaction	**.585**		
Cough and fatigue	History			
	Information Sharing			
	Patient-Physician Interaction	**.331**	.244	
Back Pain	History		-.223	
	Information Sharing		-.211	
	Patient-Physician Interaction	**.433**		

Two regression analyses were conducted to investigate the relationship between students' performance on the cultural competency items and their experiences and beliefs. Social experiences with diverse groups prior to medical school was estimated using a single question about number of college friends who were people of color. This variable and score on the Physician-Patient Interaction items on cases other than hypertension, as a measure of communication skills, were entered first into a sequential regression. Consideration of the impact of cultural differences (a four-item scale comprised of questions about the frequency with which students discussed implications of race or ethnicity about a patient, or received specific feedback on their cultural competency, or witnessed discrimination or dated someone of a different race (alpha = .65)), entered the equation simultaneously with cultural experiences in medical school (a six-item scale comprised of items about the frequency of receiving instruction on cultural competency, participation in workshops or electives on health disparities and culture, learning another language, and informal discussions and interactions about race and ethnicity (alpha = .55)). Finally, student' beliefs about the benefits of diversity

in medical school (e.g., for their ability to consider different perspectives, to treat patients from different backgrounds) entered the equation.

In the prediction of the cross-case cultural items, the addition of communication skills, medical school experiences with difference, and beliefs about the benefits of diversity in medical school all improved R-square significantly. The final equation accounts for 26% of the variance in performance ($F_{5/393} = 27.5$, $p = .000$). . Examining the standardized coefficients for the final equation indicates that communication skills was the primary contributor to performance with neither of the medical experience variables reaching significance. The coefficient for beliefs was significant, but negative (as was the zero-order correlation, -.093). Prediction of performance on the hypertension cultural items accounted for only 9% of the variance, although the final model was significant ($F_{5/391} = 7.7$, $p = .000$) and each addition increased the variance accounted for significantly. Examining the standardized regression coefficients both communication skills and beliefs are significant and positive.

Table 4: Prediction of Cultural Competency From Student Experiences, Skills and Beliefs

Predictors	Cross-case Items		Cultural case Items	
	Change R-Square	Standardized Betas	Change R-Square	Standardized Betas
Ethnic compostion of friends in college	.004	-.051	.011*	.047
Communication skills (PPI)	.217**	.516**	.063**	.205**
Instructional and social experiences	.248**	.023	.080*	-.004
Impact of differences		-.063		.031
Beliefs about benefits of diversity in medical school	.259*	-.155*	.090*	.141*

**Significant ($p < .01$); * significant ($p < .05$)

Discussion

This study examined the reliability and validity of assessing culturally competent care in an objective structured clinical examination administered to rising fourth-year students in three medical schools in California. Patient-centered care behaviors recommended in the literature as essential to providing culturally competent care were examined across cases with a variety of interpersonal demands and within a single case with cultural concerns.

Factor analysis was used to investigate the internal structure of an OSCE with attention to the relationship between cultural competency skills and other skills assessed.

Results of the factor analysis suggest that items addressing patient-centered care embedded across cases relate to general skills of communication especially establishing rapport with patients. The clinical examination skills required in a case where cultural issues dominate, while related to these general communication skills and patient-centered behaviors, tap a unique dimension of the specific case. Factor analysis results of communication-based behaviors (i.e., Hx, Is, PPI and culture) again indicate a high degree of case specificity.

The reliabilities obtained for the cultural items embedded across cases are lower than reported in studies of communication items across cases.[15] They are much lower than those reported by Robins, et al. (2001). In contrast, patient centered care items within a culturally demanding case reach an adequate level of reliability for reporting performance. One difference between prior studies and the current analysis is that the cultural items in this OSCE are dichotomous ("*done*", "*not done*"), whereas both the communication items and the cultural competency items discussed in the literature used Likert-type scales.

Investigation of the relationship between students' experiences with diverse groups, their opportunities to learn about diversity in medical school, and their beliefs about the value of diversity in their medical education to their performance on these patient-centered behaviors in the OSCE was undertaken as a means of assessing validity of the scores. Results of the regression analysis for the cross-case items indicate that performance on these behaviors is highly related to communication skills required for good physician-patient interactions. These items appear to tap into skills learned in medical school and to be unrelated to experiences and beliefs about diversity and health. In contrast, the regression analysis for the items within the cultural case, while significant statistically, explains a small portion of variance in performance. The analysis shows a somewhat different pattern of relationships. Communication skills and beliefs about the benefits of diversity in medical school, still the significant contributors, but communication skills are considerably less important relative to beliefs and beliefs now is positively related to performance. The results of the regression analyses, in combination with the investigation of the internal structure of the OSCE, provides support for the conclusion that cultural competency can be assessed and that

performance in a cultural context taps into skills associated with good physician-patient interactions, but relies on attitudes about the relationship of diverse beliefs and health.

In conclusion this study suggests that medical students' cultural competency skills can be assessed in the context of an OSCE, but their assessment requires specific cases where cross-cultural issues are present. Greater reliability may be obtained by modifying items to assess degree of competence rather than the mere presence or absence of the behavior. Further research is needed to investigate the interplay of attitudes, experiences and interpersonal skills in the provision of culturally competent care.

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